



NOAA FISHERIES WEST COAST REGION

Pacific bluefin Tuna

With their streamlined bodies and powerful tails, Pacific bluefin tuna are some of the fastest fish in the ocean. Also among the largest fish, they inhabit much of the North Pacific, ranging from East Asia to the North American West Coast. Prized for their fatty flesh and often served as maguro or toro in sushi restaurants, Pacific bluefin tuna are fished extensively throughout the Pacific. With a committee of international scientists, NOAA Fisheries works to understand how this fishing affects the population. Our most recent assessment indicates that the biomass of spawning females is historically low (only about 4% of spawning bluefins exist compared to if there had been no fishing), and the amount of fish harvested each year is high. Thus, Pacific bluefin are considered both overfished and subject to overfishing both domestically and internationally.

Their ability to keep their bodies warm, unlike most fish, likely allows Pacific bluefin to live in cooler coastal, temperate and tropical waters. They live mostly in open water.

SIZE AT MATURITY

4 to 6 feet at maturity;
Largest recorded was
9.8 feet long and 990
pounds

AGE AT MATURITY

3 to 5 years old

REPRODUCTION

Adult females can
spawn about 5 million
eggs in one year.
The largest can spawn
up to 25 million in one
year.

LIFESPAN

Average is 15 years,
though they can live up
to 26 years old.

FOOD

Squid, fish like sardines,
saury, herring, other
tunas, and sometimes
crabs

SCIENTIFIC NAME

Thunnus orientalis

The Pacific bluefin tuna is overfished and subject to overfishing

There are two types of overfishing: Recruitment overfishing occurs when fish are caught faster than the population can replace them (with new young fish or new “recruits”). Growth overfishing occurs when fish are harvested at an average size that is smaller than the size that would produce the maximum yield. In this case, less fishing would produce higher landings. A fish population is overfished when the number of fish is low enough that recruitment, the number of new fish, is likely to be impaired. Pacific bluefin tuna are not listed in the Endangered Species List. One reason that they may not be endangered is that they are very productive – females can spawn millions of eggs in one year. This is also why scientists believe that if fewer were caught for even a short period, maybe five years, the population could recover and again reach sustainable levels.

Pacific bluefin tuna fishing

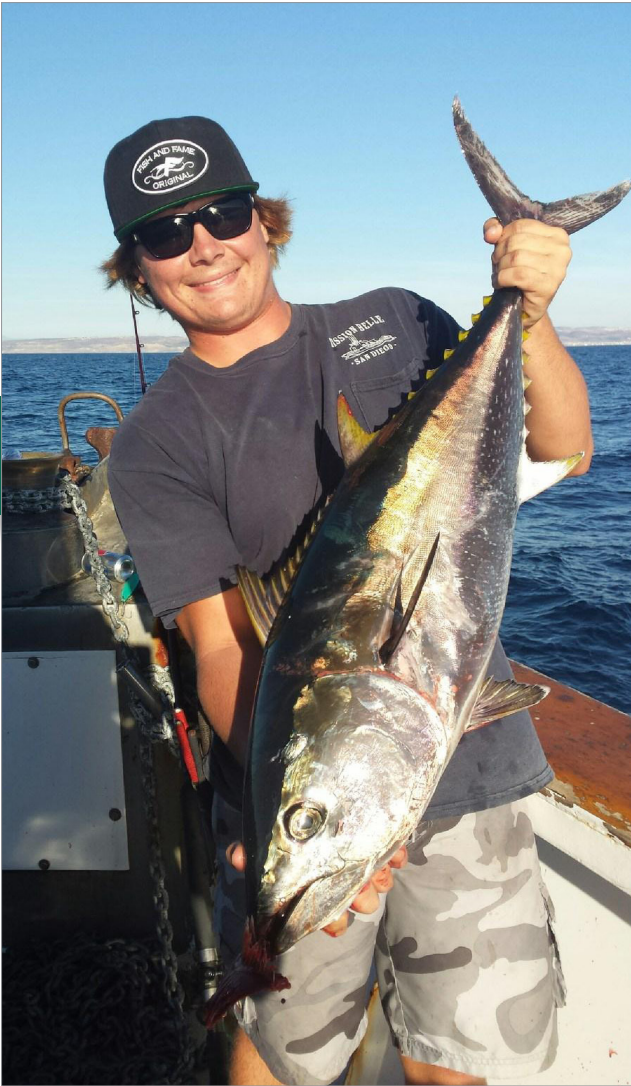
Prized for its fatty flesh, many nations harvest bluefin throughout its range across the Pacific, most often with purse-seine gear. Since 1952, the most Pacific bluefin caught in one year was over 40,000 metric tons in 1956 and the least caught in one year was 8,653 metric tons in 1990. With one of the largest fisheries, Japan has caught more than half the Pacific bluefin in all years. Mexico has the second largest. While bluefin fisheries as a whole have caught mostly juveniles since 1952, when data began to be collected, more fisheries specifically targeting juveniles started in the 1990s, increasing pressure on the juvenile population.

In recent years, U.S. fishermen have caught a relatively small portion of the overall catch

The fishery

Until the early 1980s, the U.S. had a large commercial purse-seine fishery operating off Baja California. In 1976, Mexico established its Exclusive Economic Zone (EEZ) and by the early 1980s the U.S. fishery had abandoned fishing there and now only fishes in the U.S. EEZ. Today, the purse-seine fishery that targets small pelagic fish will target bluefin when available and the drift gillnet fishery may inadvertently catch bluefin when fishing for swordfish. While U.S. sport catches are small compared to the international commercial catch, since 1999 they have often exceeded U.S. commercial catches. Juvenile bluefins dominate the recreational catch. In recent years, U.S. fishermen have caught a very small portion of the bluefin caught Pacific-wide. The table below summarizes landings since 2000.

The U.S. commercial fishery was limited to catching 500 metric tons during 2014 and is limited to catching 600 mt during 2015 and 2016 combined. In November 2014, the Pacific Fishery Management Council recommended that the daily catch of Pacific bluefin tuna be limited to two-fish for recreational fishers while fishing in U.S. waters off California, and that the possession limit be six fish for anglers operating out of California ports.



Setting fishing limits

Two international organizations set international limits for bluefin and other tunas in the Pacific Ocean. The Inter-American Tropical Tuna Commission (IATTC) manages tuna fisheries in the Eastern Pacific Ocean and the Western and Central Pacific Fisheries Commission (WCPFC) manages tuna fisheries the western and central Pacific Ocean. Both IATTC and WCPFC base their bluefin tuna management and conservation measures by consensus on science that the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean (ISC). A member of both organizations, the United States must comply with any measures that either agrees to.

Pacific bluefin tuna landings by nation			Data from ISC14 Plenary report
Nation (Commercial)	Landings Range (mt) 2000-2013	Landings (mt) in 2012	Landings (mt) in 2013
Taiwan	213 - 2,782	213	334
Japan	5,362 - 24,577	6,662	5,362
Korea	604 - 2,601	1,422	604
Mexico	863 - 9,927	6,668	3,154
United States	1 - 754	42	10
All Nation Commercial Total	11,140 - 33,661	15,021	11,140
U.S. Recreational Total	14 - 984	615	984

The U.S. is a member of the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean, an international organization dedicated to advancing fishery science through collaboration.

The Science

ISC collaborates to provide the best Pacific bluefin tuna science in the world.

NOAA Fisheries Scientists work with a group of international specialists through an organization called the International Scientific Committee for Tuna and Tuna-Like Species (ISC) to provide the best Pacific bluefin tuna scientific information for managers. Using data gathered from commercial and recreational fisheries across the Pacific as well as on-the-water scientific observations, their stock assessments describe the past and current status of the fish population, answer questions about the size of the population and make predictions about how a fishery will respond to current and future management measures.

Always working to enhance science within its means, this year NOAA began collecting size data from the U.S. recreational Pacific bluefin fishery, which operates in California and Baja California, that the Inter-American Tropical Tuna Commission (IATTC) collected until 2012. These data will be used to understand average weights of the tuna caught by U.S. sport fishers and will be used in future assessments.

NOAA scientists continually improve the scientific models they use, and are confident that the overall conclusions of ISC's recent analyses and assessment are robust.



The concern

NOAA and ISC scientists can not precisely estimate how few spawning Pacific bluefin tuna would be too few to sustain the population, but agree there is a high risk that the population has reached that point. By the time a recruitment decline is evident in the data and there are few juvenile fish to be caught, the time to rebuild the stock will increase and management actions may need to be more broad or long-lasting. The earlier management actions take place the more quickly the depleted stock can rebuild.

While the quantity of spawning bluefin tuna is very low, California fishermen are seeing and catching many more juvenile bluefin than they have in years. There are several reasons why this could be the case.

Bluefin tuna in Mexico and U.S. waters are only a small portion of the total North Pacific population. All North Pacific bluefin are born in the waters off Japan and some portion migrates to the U.S. West Coast each year. So, it is possible that a larger portion of the juvenile bluefin migrated from the spawning grounds off Japan to the West Coast in the last few years than in previous years. A small increase in the proportion that migrated can mean a large increase in the number of fish seen along the West Coast. In addition, the larger number of bluefin seen by U.S. fishermen may appear significant to the West Coast fisheries. However, it is still small compared to the number of fish seen and caught in the Western Pacific and to the number that were caught by U.S. commercial fishermen in the 1960s and 1970s, which was up to 15,000 mt a year. Another explanation for seeing more bluefin in recent years may be related to the closure of the Mexican purse seine fishery in July each of the past few years. This may have left more juvenile fish in the ocean for U.S. recreational fishermen to see and fish.

Interestingly, a smaller number of spawning bluefin does not necessarily mean that recruitment (the number of new fish produced) will be low. Given the many eggs that each mature female can spawn it is entirely possible to see many juvenile fish while the quantity of spawning fish is still very low.

Scientists are concerned because most of the spawning adults in the Western Pacific appear to be the same age, about 20 years old, and because so many juveniles are now caught that few reach adulthood. In addition, Japanese scientists report that Japanese juvenile fisheries have recently seen and caught fewer juvenile bluefin tuna, which may be a sign that recruitment is in fact declining. Japanese scientists are also observing spawning bluefin in a smaller and smaller area and finding no spawning bluefin where they used to be abundant. NOAA and ISC will continue to monitor and assess the Pacific bluefin tuna trends.

They will provide managers, international and domestic, with the science they need in order to effectively manage the fisheries and allow the population to recover.

Pacific bluefin tuna migration

Of the tunas, Pacific bluefin has the largest geographic range. It spawns in the Western Pacific between central Japan and the northern Philippines and in the Sea of Japan from April through August. While some bluefin spend their entire lives in the Western Pacific, some young fish migrate to the Eastern Pacific.

At about age one, these fish start to arrive off the coast of Baja California, Mexico. They remain in the Eastern Pacific for a few years and then migrate back to the Western Pacific Ocean to spawn, a journey taking as little as fifty-five days. Larger adults are rarely found in the U.S. waters, which stretches from 3-200 miles offshore.

Information sources

Bayliff, W.H., Y. Ishizuka, and R. Deriso. 1991. Growth, movement, and attrition of northern bluefin tuna, *Thunnus thynnus*, in the Pacific ocean, as determined by tagging. *Inter-Am. Trop. Tuna Comm. Bull.* 20:3-94

Chen, K.-S., P. Crone, and C.-C. Hsu. 2006. Reproductive biology of female Pacific bluefin tuna *Thunnus orientalis* from southwestern North Pacific Ocean. *Fish. Sci.* 72: 985-994.

ISC14. 2014. Report of the Fourteenth Meeting of the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean. Plenary Session. Taipei, Chinese-Taipei.

ISC14. 2014. Stock Assessment of Pacific Bluefin Tuna. International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean. Pacific Bluefin Tuna Working Group.

For more information go to:

<http://SWFSC.noaa.gov>

<http://www.FishWatch.gov>

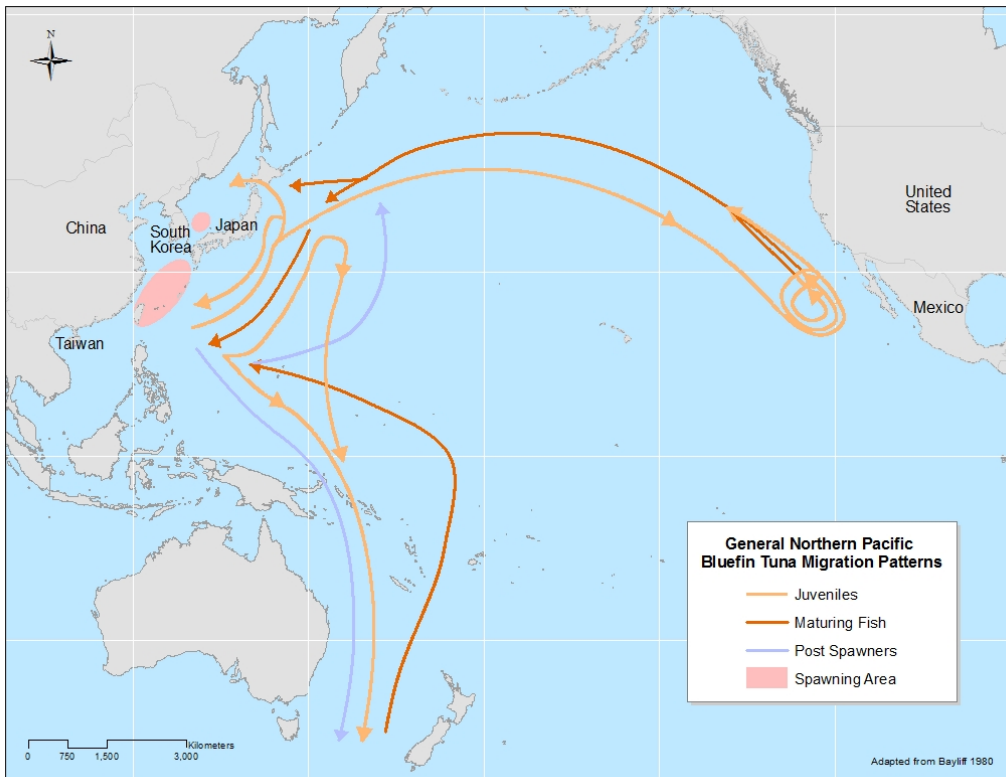
<http://IATTC.org>

<http://WCPFC.int>

<http://ISC.ac.affrc.go.jp>

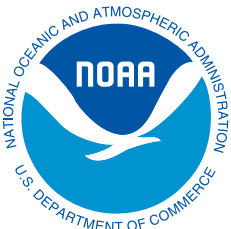
<http://www.WestCoast.fisheries.noaa.gov/>

<http://www.pcouncil.org>



Why were recreational charters not allowed to fish for bluefin in Mexico this year?

The IATTC, the international commission that manages tuna in the Eastern Pacific, placed limits on the amount of Pacific bluefin that commercial fisheries could catch in 2014. When Mexico neared that limit, the government did not want to risk exceeding it so they closed fishing for bluefin in their waters without differentiating between commercial and recreational fishing.



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